

REMARKS

Claims 1-6 are pending in the current application. Claims 1-3 stand rejected, claims 4-6 are newly added and Applicant respectfully requests reconsideration and allowance of claims 1-6.

The specification has been amended to fix an editorial mistake in the specification. As requested by the Examiner, "lower vessel 21b" was amended to "lower vessel 12b" in paragraph [0045]. Additionally, the phrase in paragraph [0074], "heat the substrate 14" was corrected to read "heat the partition plate 14." Support for such change can be found throughout the specification and specifically at paragraph [0032]. Also, a new title "CVD APPARATUS" has been presented to replace the title "METHOD OF CLEANING A CVD DEVICE."

Claim 1 has been amended to reflect consistent terminology throughout the claims. Specifically, " partition section" was amended to " partitioning section". Support for such amendment can be found throughout the specification. Additionally, claim 3 has been canceled.

§103(a) - Obviousness

Claims 1-3 stand rejected under 35 U.S.C. § 103(a) as allegedly obvious over:

- 1) *Xu et al.* (U.S. Patent Application Publication No. 2001/0042512) in view of *Kasai et al.* (U.S. Patent No. 6,436,193) and *Lee et al.* (U.S. Patent No. 6,074,519);
- 2) *Ko* (U.S. Patent No. 6,427,623) in view of *Kasai et al.* (U.S. Patent No. 6,436,193) and *Lee et al.* (U.S. Patent No. 6,074,519);

3) *Tanaka et al.* (U.S. Patent Application Publication No. 2002/0152960) in view of *Kasai et al.* (U.S. Patent No. 6,436,193) and *Lee et al.* (U.S. Patent No. 6,074,519); or

4) *Yuda et al.* (U.S. Patent No. 6,663,715) in view of *Kasai et al.* (U.S. Patent No. 6,436,193) and *Lee et al.* (U.S. Patent No. 6,074,519).

These rejections are respectfully traversed.

Each of these rejections applies the teachings of *Kasai et al.* and *Lee et al.* to generic teachings of plasma CVD devices from *Xu et al.*, *Ko*, *Tanaka et al.*, and *Yuda et al.* That is, for each of these rejections the Examiner presented a reference, *Xu et al.*, *Ko*, *Tanaka et al.*, and *Yuda et al.*, respectively, in combination with *Kasai et al.* and *Lee et al.* Specifically, the Examiner has asserted for each of *Xu et al.*, *Ko*, *Tanaka et al.*, and *Yuda et al.*, that they do not teach a heater for the electrically conducting partitioning section, nor do they teach that the partitioning section is mounted to the vacuum vessel using screws and an electrically conductive spiral shield to achieve electrical conduct. To cure these deficiencies the Examiner relies upon *Kasai et al.* to teach that showerheads can be heated; upon *Lee et al.* to teach that conductive O-rings 62 are used to electrically couple an electrode to the walls of the vacuum chamber; and that screws are well known in the art and commonly used to attach parts together.

As set forth below, applicant respectfully counters that these combinations are not proper and do not teach the claimed invention. Moreover, applicant reserves the right to make any necessary showing, oath or declaration to overcome *Xu et al.*, *Ko*, *Tanaka et al.*, and *Yuda et al.*

With regard to *Kasai et al.* the Examiner has relied upon a statement that generically states:

The showerhead 8 has a heating mechanism and a cooling mechanism as inner units (not shown). When CVD reaction gas is delivered to the interior of the shower head 8, the temperature in the shower head 8 is controlled so that it is lower than the reaction temperature and higher than the liquefying temperature of components of the CVD reaction gas.

Column 10, lines 12-18. However, this is describing heating elements in a shower head that is significantly different from that of the claimed invention. The shower head described in *Kasai et al.* is a **thermal** CVD apparatus, with no electrode in the first chamber, which is less complex than the **plasma** CVD apparatus shower head described in the primary references. Thus, *Kasai et al.* is not analogous prior art for the purpose of analyzing the subject matter at issue. One skilled in the art would not rely upon a generic statement about a **thermal** CVD apparatus shower head when seeking improvement for a **plasma** CVD apparatus shower head.

Moreover, a generic statement that the shower head has a heating mechanism does not teach or suggest the claimed heater for the electrically conductive **partitioning section**. There is different rationale and use for a heater specifically for the partitioning section than for the shower head in general.

Moreover, the Examiner asserts that the motivation for adding a heater to the partitioning section of *Xu et al.* as taught by *Kasai et al.* is to control the temperature of the processing gas to prevent condensation of the processing gas or heat the processing gas to the desired temperature prior to the gas entering the processing

vessel. For the thermal CVD apparatus of *Kasai et al.* such motivation may be present, however, such motivation does not translate to the plasma CVD apparatuses of *Xu et al.*, *Ko*, *Tanaka et al.*, and *Yuda et al.* or the present invention. Therefore, *Kasai et al.* does not teach or suggest the heater for heating the electrically conductive partitioning section of claim 1.

Accordingly, the applicants respectfully request that the rejections of claims 1-2 under §103(a) as being allegedly obvious over *Xu et al.* (U.S. Patent Application Publication No. 2001/0042512) in view of *Kasai et al.* (U.S. Patent No. 6,436,193) and *Lee et al.* (U.S. Patent No. 6,074,519); 2) *Ko* (U.S. Patent No. 6,427,623) in view of *Kasai et al.* (U.S. Patent No. 6,436,193) and *Lee et al.* (U.S. Patent No. 6,074,519); 3) *Tanaka et al.* (U.S. Patent Application Publication No. 2002/0152960) in view of *Kasai et al.* (U.S. Patent No. 6,436,193) and *Lee et al.* (U.S. Patent No. 6,074,519); or 4) *Yuda et al.* (U.S. Patent No. 6,663,715) in view of *Kasai et al.* (U.S. Patent No. 6,436,193) and *Lee et al.* (U.S. Patent No. 6,074,519), be withdrawn.

Concerning the rejections of claims 2 and 3, the Examiner appears to rely on the teachings of *Lee* with regard to the claimed spiral shield which is defined as providing an electrical connection between the partitioning section and the vacuum vessel. The claims also define the vacuum vessel as being separated by the partitioning section into two chambers.

However, *Lee* is quite different from the present invention. For example, *Lee* relates to a dry etching apparatus. It does not teach a vacuum vessel that is separated into two chambers by a partitioning section. In *Lee*, there is only one chamber that has a first electrode 40 at the bottom of the chamber and a second electrode 30 which forms the top of the vacuum vessel. See column 6, lines 23-34,

and column 1, lines 22- 25. Thus, there is no teaching of a partitioning section in *Lee*.

Although *Lee* teaches a conductive o-ring 62 to connect the top wall 30 to the remainder of the vacuum vessel, there is clearly no teaching of using a conductive element to connect a partitioning section to the remainder of the vessel.

Furthermore, there is no teaching of a spiral shield to achieve electrical contact between the partitioning section and the vacuum vessel. And, lastly, there is no teaching of the mounting screw defined in claims 2 and 3 to achieve the claimed electrical connection.

Accordingly, applicant submits that the teachings of *Lee* are totally insufficient to form the basis for a rejection of claims 2 and 3 as relied upon by the examiner.

DOUBLE PATENTING

Claims 1-3 stand rejected under the judicially created doctrine of obviousness-type double patenting over:

- 1) Claims 1-6 of Nogami (U.S. Patent No. 6,245,396) in view of *Kasai et al.* (U.S. Patent No. 6,436,193) and *Lee et al.* (U.S. Patent No. 6,074,519);
- 2) Claims 1-6 of *Ko* (U.S. Patent No. 6,427,623) in view of *Kasai et al.* (U.S. Patent No. 6,436,193) and *Lee et al.* (U.S. Patent No. 6,074,519);
- 3) (provisionally) Claims 1-24 of copending Application *Xu et al.* (U.S. Patent Application Publication No. 2001/0042512 and Application No. 09/863,338) in view of *Kasai et al.* (U.S. Patent No. 6,436,193) and *Lee et al.* (U.S. Patent No. 6,074,519); or

4) (provisionally) Claims 1-21 of *Tanaka et al.* (U.S. Patent Application Publication No. 2002/0152960 and Application No. 09/862,458) in view of *Kasai et al.* (U.S. Patent No. 6,436,193) and *Lee et al.* (U.S. Patent No. 6,074,519).

These rejections are respectfully traversed.

Each of these rejections applies the teachings of *Kasai et al.* and *Lee et al.* to generic teachings of plasma CVD devices from *Nogami, Ko, Xu et al.*, and *Tanaka et al.* That is, for each of these rejections the Examiner presented a reference, *Nogami, Ko, Xu et al.*, and *Tanaka et al.*, respectively, in combination with *Kasai et al.* and *Lee et al.* As discussed above, applicant respectfully asserts that these combinations are not proper and do not teach or suggest the claimed invention. That is, *Nogami, Ko, Xu et al.*, and *Tanaka et al.* do not teach either a heater for heating the electrically conductive partitioning section or the combination that includes a spiral shield for electrically connecting a partition section to the remainder of the vacuum vessel. *Kasai et al.* and *Lee et al.* do not remedy these deficiencies. Moreover, applicant reserves the right to make any necessary showing, oath or declaration to overcome *Nogami, Ko, Xu et al.*, and *Tanaka et al.*

Accordingly, the applicant respectfully requests that the rejections of claims 1-3 under the judicially created doctrine of obviousness-type double patenting over Claims 1-6 of *Nogami* (U.S. Patent No. 6,245,396) in view of *Kasai et al.* (U.S. Patent No. 6,436,193) and *Lee et al.* (U.S. Patent No. 6,074,519); Claims 1-6 of *Ko* (U.S. Patent No. 6,427,623) in view of *Kasai et al.* (U.S. Patent No. 6,436,193) and *Lee et al.* (U.S. Patent No. 6,074,519); (provisionally) Claims 1-24 of copending Application *Xu et al.* (U.S. Patent Application Publication No. 2001/0042512 and

Application No. 09/863,338) in view of *Kasai et al.* (U.S. Patent No. 6,436,193) and *Lee et al.* (U.S. Patent No. 6,074,519); or (provisionally) Claims 1-21 of *Tanaka et al.* (U.S. Patent Application Publication No. 2002/0152960 and Application No. 09/862,458) in view of *Kasai et al.* (U.S. Patent No. 6,436,193) and *Lee et al.* (U.S. Patent No. 6,074,519), be withdrawn.

New claims 4-6 have been added to the present application. Specifically, new claims 4-6 depend from claim 1, and are thus patentable, and specify specific temperatures to which the heater is adapted to heat the partitioning section.


In view of the foregoing, further and favorable consideration of the subject application in the form of a Notice of Allowance is respectfully requested.

If there are any questions concerning this response, or the application in general, the Examiner is respectfully requested to telephone applicant's undersigned representative so that prosecution may be expedited.

Respectfully submitted,

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